

by adding a chapter which should drive home to this somewhat apathetic class of learners that botany is no longer to be looked upon by them as a luxury or hobby, or as an interesting adjunct to the study of agriculture, but it must be regarded as *the* fundamental science on which all agricultural operations must be based; and such a chapter should make it perfectly clear that the neglect of the principles and facts it embraces is going to spell ruin in the future, just as the intelligent appreciation of its teachings is going to render the properly trained and equipped planter, forester or farmer, master of the situation his forefathers misunderstood.

#### OUR BOOK SHELF.

*Surveying and Exploring in Siam.* By James McCarthy, F.R.G.S., Director-General of the Siamese Government Surveys. Pp. xii + 215. (London: John Murray, 1900.)

ABOUT the year 1880 the Siamese Government became convinced of the necessity of accurate surveys for frontier delimitation, and then it was that Mr. McCarthy commenced the long series of explorations which are recorded in the present work, and which have won for him the gold medal of the Royal Geographical Society. To the student of Indo-China, Mr. McCarthy's book is full of extremely valuable information regarding the aboriginal and mountain races of the highlands of the interior, with whom the nature of the author's work brought him into constant contact. Mr. McCarthy has a sympathetic eye for his fellow travellers, and a kindly word for all but the most obstructive of the native officials. From obstruction by this class, the officers of the Siamese Survey have indeed suffered probably more than any other European officials of the Government; inasmuch as the Survey was practically the pioneer department of the modern régime, and it had to contend against the whole of the forces of conservatism, superstition and suspicion which were at the outset arrayed against all innovation of the kind. Against these, for many years, Mr. McCarthy battled almost single-handed, carrying out meantime slowly and laboriously the triangulation of the frontier districts, and himself training his own assistants. The physical difficulties of the country, which can only be thoroughly appreciated by those who have experienced them, and the inevitable sickness which attacks all who spend the wet season in the jungle, further delayed and hampered the work. The author makes light of the difficulties which had to be overcome, but those who read between the lines will see how formidable they were.

As may be supposed, the book is in no way popular or sensational, and the author's dry, matter-of-fact style does not lend itself to picturesque narrative. Yet politics on the north-eastern frontier of Siam during the incursions of the Haw bandits, in the 'eighties, were exciting enough. If one desired to be critical, one might say that the book is composed of short sentences and scrappy and incomplete descriptions. Yet these faults will be condoned by all who take an interest in scientific geography for the sake of the admirable scientific results of Mr. McCarthy's work. And those who seek to know more of the magnificent plateau of Teng, the highest peaks of Indo-China, or the very interesting hill tribes, such as the Ka, Lamet, Meo and Yao, and the Southern Shân races generally, will find more accurate information in the present work than in any other we are acquainted with.

An excellent index, triangulation charts, and a map of Siam in two sheets, with a number of illustrations, complete a work which forms an important addition to the bibliography of Eastern Asia.

*Church Stretton.* Vol. i. *Geology*, by E. S. Cobbold; *Macro-Lepidoptera*, by F. B. Newnham; *Molluscs*, by Robert A. Buddicom. Edited by C. W. Campbell-Hyslop. Pp. 196. (Shrewsbury: L. Wilding.)

THIS is an excellent piece of work, and reflects much credit upon those who originated the idea of preparing an account of the scientific features of the Church Stretton district, and also upon the contributors, editor and publisher of the present volume. Church Stretton is a market-town about twelve miles south by west of Shrewsbury, Shropshire, and has a population of about 2000. The district is interesting from a geological point of view, and Mr. Cobbold's notes (which occupy the greater part of the book) will be valuable to geologists visiting it for the first time, and will also give residents a new interest in their rambles. Most of the fossiliferous localities and the main rock exposures are mentioned or described, so that any one interested in the geological and topographical characteristics can readily find them.

Mr. Newnham gives a descriptive catalogue of the macro-lepidoptera found in the neighbourhood of Church Stretton. The district is a fair field and good hunting-ground for the entomologist, many insects being found in it which do not occur in the lower-lying parts of Shropshire. Future collectors will find the catalogue exceptionally valuable, and will doubtless be able to supplement it.

A list of the land and fresh-water molluscs, with notes on the habits of each species and its comparative local scarcity and abundance, is given by Mr. R. A. Buddicom. The total number of species of British land and fresh-water molluscs is reckoned at 138 (not counting slugs) of which 42 have been found in or near Stretton. A plate containing illustrations of 37 species, natural size, photographed from actual specimens, accompanies Mr. Buddicom's paper.

Other monographs, on the botany, archaeology, climatology and ornithology of the district, are in preparation, and if they are of the character of this one they will afford pleasure to every resident or visitor in Church Stretton who has an interest in the study of outdoor nature. The district is fortunate in possessing such a useful guide to its natural characteristics.

*Surveying with the Tacheometer.* By N. Kennedy. Pp. vi + 104. (London: Crosby Lockwood and Son, 1900.)

THIS handy little volume is put forward in the hope of bringing the tacheometer into more general use among land surveyors, its present position in the background being due chiefly, the author thinks, to the fact of the Continental instruments having hitherto been provided with circles divided with  $100^\circ$  to a right angle, instead of  $90^\circ$ , thus necessitating special reduction tables. The publication of a universal method of reduction, no matter what the division value, by Mr. G. Gilman removes the greater part of these objections.

The tacheometer is first minutely described, excellent illustrations being provided for reference, the only essential difference from a good transit theodolite being the insertion of a subsidiary lens between the objective and eye-piece, which, by special adjustment, enables the angular distance between two wires in the eye-piece to be made equal to any desired quantity, decided by calibration on a previously measured base. Subsequent sections deal with the variations introduced by working on inclined ground, details of actual field and office work, concluding with some suggestions on possible methods of utilising existing transit theodolites for tacheometric work. Examples of entries in field-book, plans of surveys, &c., are given at the end of the book. The work is very clearly written, and should remove all difficulties in the way of any surveyor desirous of making use of this useful and rapid instrument.